

**CPC****COOPERATIVE PATENT CLASSIFICATION****H03G**

**CONTROL OF AMPLIFICATION** (impedance networks, e.g. attenuators, H03H; control of transmission in lines [H04B 3/04](#))

**NOTE**

This subclass covers:

- control of gain of amplifiers or frequency-changers,
- control of frequency range of amplifiers,
- limiting amplitude or rate of change of amplitude

Attention is drawn to the Note following the title of subclass H03F.

**H03G 1/00**

**Details of arrangements for controlling amplification** {for arrangements combined with means for generating a controlling signal, or these means per se, see the other main groups of [H03G](#)}

## H03G 1/0005

- . {Circuits characterised by the type of controlling devices operated by a controlling current or voltage signal}

## H03G 1/0011

- .. {the device being at least one of the amplifying tubes of the amplifier}

## H03G 1/0017

- .. {the device being at least one of the amplifying solid state elements of the amplifier}

## H03G 1/0023

- ... {in emitter-coupled or cascode amplifiers (**H03GB4F takes precedence**)}

## H03G 1/0029

- ... {using FETs}

## H03G 1/0035

- .. {using continuously variable impedance elements}

## H03G 1/0041

- ... {using thermistors}

## H03G 1/0047

- ... {using photo-electric elements}

## H03G 1/0052

- ... {using diodes}

## H03G 1/0058

- .... {PIN-diodes}

## H03G 1/0064

- .... {Variable capacitance diodes}

## H03G 1/007

- ... {using FET type devices}

## H03G 1/0076

- ... {using galvanomagnetic elements}

## H03G 1/0082

- ... {using bipolar transistor-type devices}

## H03G 1/0088

- .. {using discontinuously variable devices, e.g. switch-operated}

## H03G 1/0094

- ... {using switched capacitors}

## H03G 1/02

- . Remote control of amplification, tone, or bandwidth (remote control in general [G05](#), [G08](#); combined with remote tuning or selection of resonant circuits [H03J](#))

## H03G 1/04

- . Modifications of control circuit to reduce distortion caused by control (modifications to reduce influence of variations of internal impedance of amplifying elements caused by control [H03F 1/08](#))

- H03G 3/00**      **Gain control in amplifiers or frequency changers** {without distortion of the input signal}(gated amplifiers [H03F 3/72](#); peculiar to television receivers [H04N](#))
- H03G 3/001      . {Digital control of analog signals}
- H03G 3/002      . { Control of digital or coded signals ([H03G 3/3089](#) take precedence)}
- H03G 3/004      . {Control by varying the supply voltage}
- H03G 3/005      . {Control by a pilot signal ([H03G 3/001](#) takes precedence)}
- H03G 3/007      . {Control dependent on the supply voltage}
- H03G 3/008      . {Control by switched capacitors}
- H03G 3/02      . Manually-operated control {[H03G 3/001](#) and [H03G 3/002](#) take precedence}
- H03G 3/04      ..    in untuned amplifiers
- H03G 3/06      ...    having discharge tubes
- H03G 3/08      ....    incorporating negative feedback
- H03G 3/10      ...    having semiconductor devices
- H03G 3/12      ....    incorporating negative feedback
- H03G 3/14      ..    in frequency-selective amplifiers
- H03G 3/16      ...    having discharge tubes
- H03G 3/18      ...    having semiconductor devices
- H03G 3/20      . Automatic control ({[H03G 3/005](#) takes precedence}; combined with volume compression or expansion [H03G 7/00](#))
- H03G 3/22      ..    in amplifiers having discharge tubes
- H03G 3/225      ...    {controlling or controlled by the (local) oscillators of a (super)heterodyne receiver}
- H03G 3/24      ...    Control dependent upon ambient noise level or sound level
- H03G 3/26      ...    Muting amplifier when no signal is present {or when only weak signals are present, or caused by the presence of noise, e.g. squelch systems}
- H03G 3/28      ....    in frequency-modulation receivers; {in angle-modulation receivers}
- H03G 3/30      ..    in amplifiers having semiconductor devices
- H03G 3/3005      ...    {in amplifiers suitable for low-frequencies, e.g. audio amplifiers ([H03G 3/32](#), [H03G 3/34](#) take precedence)}
- H03G 3/301      ....    {the gain being continuously variable}
- H03G 3/3015      .....    {using diodes or transistors}
- H03G 3/3021      .....    {by varying the duty cycle}
- H03G 3/3026      ....    {the gain being discontinuously variable, e.g. controlled by switching}
- H03G 3/3031      .....    {using switched capacitors}
- H03G 3/3036      ...    {in high-frequency amplifiers or in frequency-changers ([H03G 3/3052](#), [H03G 3/32](#), [H03G 3/34](#) take precedence)}

H03G 3/3042	....	{ in modulators, frequency-changers, transmitters or power amplifiers ( <b>transmission power control in bidirectional transmission systems</b> <a href="#">H04W 52/04</a> )}
H03G 3/3047	.....	{for intermittent signals, e.g. burst signals}
H03G 3/3052	...	{in bandpass amplifiers (H.F. or I.F.) or in frequency-changers used in a (super)heterodyne receiver ( <a href="#">H03G 3/32</a> , <a href="#">H03G 3/34</a> <b>take precedence</b> )}
H03G 3/3057	....	{using at least one diode as controlling device}
H03G 3/3063	....	{using at least one transistor as controlling device, the transistor being used as a variable impedance device}
H03G 3/3068	....	{Circuits generating control signals for both R.F. and I.F. stages}
H03G 3/3073	....	{ Circuits generating control signals when no carrier is present, or in SSB, CW or pulse receivers}
H03G 3/3078	....	{ Circuits generating control signals for digitally modulated signals}
H03G 3/3084	...	{in receivers or transmitters for electromagnetic waves other than radiowaves, e.g. lightwaves ( <a href="#">H03G 3/32</a> , <a href="#">H03G 3/34</a> <b>take precedence</b> )}
H03G 3/3089	...	{Control of digital or coded signals}
H03G 3/3094	...	{in parametric amplifiers ( <a href="#">H03G 3/32</a> , <a href="#">H03G 3/34</a> <b>take precedence</b> )}
H03G 3/32	...	the control being dependent upon ambient noise level or sound level
H03G 3/34	...	Muting amplifier when no signal is present {or when only weak signals are present, or caused by the presence of noise signals, e.g. squelch systems}
H03G 3/341	....	{Muting when no signals or only weak signals are present ( <a href="#">H03G 3/344</a> , <a href="#">H03G 3/345</a> <b>take precedence</b> )}
H03G 3/342	....	{Muting when some special characteristic of the signal is sensed which distinguishes it from noise, e.g. using speech detector ( <a href="#">H03G 3/344</a> , <a href="#">H03G 3/345</a> <b>take precedence</b> )}
H03G 3/344	....	{Muting responsive to the amount of noise ( <b>noise squelch</b> )( <a href="#">H03G 3/345</a> <b>takes precedence</b> )}
H03G 3/345	....	{Muting during a short period of time when noise pulses are detected, i.e. blanking ( <a href="#">H03G 3/348</a> <b>takes precedence</b> )}
H03G 3/347	.....	{dependent on the rate of noise pulses}
H03G 3/348	....	{Muting in response to a mechanical action or to power supply variations, e.g. during tuning; Click removal circuits}

**H03G 5/00****Tone control or bandwidth control in amplifiers**

H03G 5/005	.	{of digital signals ( <b>see provisionally also</b> <a href="#">H03G 5/00</a> )}
H03G 5/02	.	Manually-operated control ( <b>variable bandpass or bandstop filters</b> <a href="#">H03H 7/12</a> )
H03G 5/025	..	{Equalizers; Volume or gain control in limited frequency bands}
H03G 5/04	..	in untuned amplifiers
H03G 5/06	...	having discharge tubes
H03G 5/08	....	incorporating negative feedback
H03G 5/10	...	having semiconductor devices
H03G 5/12	....	incorporating negative feedback
H03G 5/14	..	in frequency-selective amplifiers
H03G 5/16	.	Automatic control

- H03G 5/165 . . {Equalizers; Volume or gain control in limited frequency bands}
- H03G 5/18 . . in untuned amplifiers
- H03G 5/20 . . . having discharge tubes
- H03G 5/22 . . . having semiconductor devices
- H03G 5/24 . . in frequency-selective amplifiers
- H03G 5/26 . . . having discharge tubes
- H03G 5/28 . . . having semiconductor devices
  
- H03G 7/00** **Volume compression or expansion in amplifiers** {frequency dependent [H03G 9/00](#)}
  
- H03G 7/001 . {without controlling loop ([H03G 7/007](#), [H03G 7/02](#), [H03G 7/06](#) take precedence)}
- H03G 7/002 . {in untuned or low-frequency amplifiers e.g. audio amplifiers ([H03G 7/007](#), [H03G 7/001](#), [H03G 7/008](#), [H03G 7/02](#), [H03G 7/06](#) take precedence)}
- H03G 7/004 . . {using continuously variable impedance devices}
- H03G 7/005 . . {using discontinuously variable devices, e.g. switch-operated}
- H03G 7/007 . {of digital or coded signals (see provis. also [H03G 7/00](#))}
- H03G 7/008 . {Control by a pilot signal ([H03G 7/007](#), [H03G 7/02](#), [H03G 7/06](#) take precedence)}
- H03G 7/02 . having discharge tubes
- H03G 7/04 . . incorporating negative feedback
- H03G 7/06 . having semiconductor devices
- H03G 7/08 . . incorporating negative feedback
  
- H03G 9/00** **Combinations of two or more types of control, e.g. gain control and tone control**
  
- H03G 9/005 . { of digital or coded signals}
- WARNING**
- [H03G 9/00](#))
  
- H03G 9/02 . in untuned amplifiers (combined tone controls for low and high frequencies [H03G 5/00](#)){compression or expansion combined with volume control [H03G 7/00](#)}
- H03G 9/025 . . {frequency-dependent volume compression or expansion, e.g. multiple-band systems ([H03G 9/10](#), [H03G 9/18](#) take precedence)}
- H03G 9/04 . . having discharge tubes
- H03G 9/06 . . . for gain control and tone control
- H03G 9/08 . . . . incorporating negative feedback
- H03G 9/10 . . . for tone control and volume expansion or compression
- H03G 9/12 . . having semiconductor devices
- H03G 9/14 . . . for gain control and tone control
- H03G 9/16 . . . . incorporating negative feedback

- H03G 9/18 . . . for tone control and volume expansion or compression
- H03G 9/20 . in frequency-selective amplifiers
- H03G 9/22 . . having discharge tubes
- H03G 9/24 . . having semiconductor devices
- H03G 9/26 . in untuned amplifying stages as well as in frequency-selective amplifying stages ([gain control in both stages H03G 3/00](#); [tone control or bandwidth control H03G 5/00](#)){[compression or expansion combined with volume control H03G 7/00](#)}
- H03G 9/28 . . all amplifying stages having discharge tubes
- H03G 9/30 . . all amplifying stages having semiconductor devices

### **H03G 11/00** Limiting amplitude; Limiting rate of change of amplitude; {Clipping in general}

- H03G 11/002 . {[without controlling loop \(H03G 11/004, H03G 11/006, H03G 11/008, H03G 11/02, H03G 11/04, H03G 11/06, H03G 11/08 take precedence; see provisional also H03G 11/00\)](#)}
- H03G 11/004 . {[using discharge tubes \(H03G 11/008 takes precedence\)](#)}
- H03G 11/006 . {[in circuits having distributed constants \(H03G 11/008 takes precedence\)](#)}
- H03G 11/008 . {[of digital or coded signals \(see provis. also H03G 11/00, H03G 11/02\)](#)}
- H03G 11/02 . by means of diodes ({[H03G 11/008](#)},[H03G 11/04](#), [H03G 11/06](#), [H03G 11/08 take precedence](#))
- H03G 11/025 . . {[in circuits having distributed constants](#)}
- H03G 11/04 . Limiting level dependent on strength of signal; Limiting level dependent on strength of carrier on which signal is modulated {[H03G 11/008 takes precedence](#)}
- H03G 11/06 . Limiters of angle-modulated signals; such limiters combined with discriminators ({[N: H03G 11/00 takes precedence; discriminators having an inherent limiting action H03D 3/00](#)}
- H03G 11/08 . Limiting rate of change of amplitude {[H03G 11/008 takes precedence](#)}

### **H03G 99/00** Subject matter not provided for in other groups of this subclass

### **H03G 2201/00** Indexing scheme relating to subclass H03G

- H03G 2201/10 . Gain control characterised by the type of controlled element
- H03G 2201/103 . . being an amplifying element
- H03G 2201/106 . . being attenuating element
- H03G 2201/20 . Gain control characterized by the position of the detection
- H03G 2201/202 . . being in baseband

- H03G 2201/204 .. being in intermediate frequency
- H03G 2201/206 .. being in radio frequency
- H03G 2201/208 .. being in power supply of the amplifier
  
- H03G 2201/30 . Gain control characterized by the type of controlled signal
- H03G 2201/302 .. being baseband signal
- H03G 2201/305 .. being intermediate frequency signal
- H03G 2201/307 .. being radio frequency signal
  
- H03G 2201/40 . Combined gain and bias control
  
- H03G 2201/50 . Gain control characterized by the means of gain control
- H03G 2201/502 .. by switching impedance in feedback loop
- H03G 2201/504 .. by summing selected parallel amplifying paths, i.e. more amplifying/attenuating paths summed together
- H03G 2201/506 .. by selecting one parallel amplifying path
- H03G 2201/508 .. by using look-up tables
  
- H03G 2201/60 . Gain control characterized by varying time constants in control loop
- H03G 2201/603 .. time constant being continuous
- H03G 2201/606 .. time constant being discrete
  
- H03G 2201/70 . Gain control characterized by the gain control parameter
- H03G 2201/702 .. being frequency, e.g. frequency deviations
- H03G 2201/704 .. being number of multiplexed channels
- H03G 2201/706 .. being quality indicator, e.g. BER,C/I
- H03G 2201/708 .. being temperature